ABSTRACT OF THE DISCLOSURE

A chimeric LL2 monoclonal antibody is described in which the complementarity determining regions (CDRs) of the light and heavy chains of the murine LL2 anti-B-lymphoma, anti-leukemia cell monoclonal antibody has been recombinantly joined to the human *kappa* and IgG_1 constant region domains, respectively, which retains the immunospecificity and B-cell lymphoma and leukemia cell internalization capacity of the parental murine LL2 monoclonal antibody, and which has the potential of exhibiting reduced human anti-mouse antibody production activity. A humanized LL2 monoclonal antibody is described in which the CDRs of the light and heavy chains have been recombinantly joined to a framework sequence of human light and heavy chains variable regions, respectively, and subsequently linked to human kappa and IgG_1 constant region domains, respectively, which retains the immunospecificity and B-lymphoma and leukemia cell internalization capacities of the parental murine and chimeric LL2 monoclonal antibodies, and which has the potential for exhibiting reduced human anti-mouse antibody production activity. Vectors for producing recombinant chimeric and humanized chimeric monoclonal antibodies are provided. Isolated DNAs encoding the amino acid sequences of the LL2 variable light and heavy chain and CDR framework regions are described. Conjugates of chimeric and humanized chimeric LL2 antibodies with cytotoxic agents or labels find use in therapy and diagnosis of B-cell lymphomas and leukemias.